

From glowbugs@theporch.com Sat Oct 19 11:16:54 1996  
Return-Path: <glowbugs@theporch.com>  
Received: from uro (localhost.theporch.com [127.0.0.1]) by uro.theporch.com  
(8.8.2/AUX-3.1.1) with SMTP id LAA20026; Sat, 19 Oct 1996 11:10:23 -0500 (CDT)  
Date: Sat, 19 Oct 1996 11:10:23 -0500 (CDT)  
Message-Id: <199610191610.LAA20026@uro.theporch.com>  
Errors-To: conard@tntech.campus.mci.net  
Reply-To: glowbugs@theporch.com  
Originator: glowbugs@theporch.com  
Sender: glowbugs@theporch.com  
Precedence: bulk  
From: glowbugs@theporch.com  
To: Multiple recipients of list <glowbugs@theporch.com>  
Subject: GLOWBUGS digest 325  
X-Listprocessor-Version: 6.0c -- ListProcessor by Anastasios Kotsikonas  
X-Comment: Please send list server requests to listproc@theporch.com  
Status: 0

#### GLOWBUGS Digest 325

Topics covered in this issue include:

- 1) Re: Xtal grinding...  
by "Paul F. Carreiro" <carreiro@current.BarePower.net>
- 2) Re: GB request  
by jeffd@coriolis.com (Jeff Duntemann)
- 3) Re: GB request  
by toyboat@freenet.edmonton.ab.ca
- 4) Upload of Coil ver.2 (inductance calculator)  
by Jeffrey Herman <jherman@hawaii.edu>

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Date: Fri, 18 Oct 1996 10:09:47 -0700  
From: "Paul F. Carreiro" <carreiro@current.BarePower.net>  
To: glowbugs@theporch.com  
Subject: Re: Xtal grinding...  
Message-ID: <199610181709.KAA08141@current.barepower.net>

At 09:12 AM 10/18/96 -0500, Bob/NA4G wrote:

>There was a big posting on xtal grinding about a year back, maybe someone  
>has that still and can repost.

That was me.. I compiled the responses to my crystal grinding question a year ago into a text file that is roughly 25K in size... too big to post. There's lots of great tips in there. I believe it is available through the boatanchor archives... look for FT243.txt or xtal.txt (can't remember which one Jack used).



The file is also available via E-Mail from me. Please respond privately to me if you want it via E-Mail.

Enjoy.

Paul N6HCS (not for long)

Paul F. Carreiro - N6HCS - E-Mail: carreiro@barepower.net  
QRP / Boatanchors / Mobile CW / QRQ +40WPM  
NorCal QRP #367 / QRP QRCI #8885 / CW FISTS #1407 / QRP-L #236  
Zuni Loop Mountain Expeditionary Force (QRP Field Day)

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Date: Fri, 18 Oct 1996 10:15:49 -0700  
From: jeffd@coriolis.com (Jeff Duntemann)  
To: mjsilva@ix.netcom.com  
Cc: glowbugs@theporch.com  
Subject: Re: GB request  
Message-ID: <1.5.4.32.19961018101223.00effeb0@ntserver.coriolis.com>

At 02:22 PM 10/1/96 -0500, KK6GM wrote:

>Being ever-curious regarding glowbug stuff, whenever I read something  
>like "...so I built a four-tube receiver...", I always want to know  
>more: What tubes? What I-F, Where'd you get the circuit, etc. I'd like  
>to encourage everybody to add a little extra info in their rig  
>descriptions (past and present), both because it's interesting and  
>because it can lead to helpful "say, how'd you solve..." exchanges.

As I have several low-power (little too QRO to be QRP) tube rigs, I'm currently working on a tube superhet for 40 and 80. The circuit is from the April 1966 QST, page 49. It's a Lew McCoy design and has 3 tubes, all three of them 6U8As. There are actually six triode sections at work in the circuit, plus two 1N34A diodes acting as the detector. There's an RF amp, a mixer, separate LO, IF amp, BFO, and 1 audio stage. I may sub in a different and more powerful 2-stage audio amp because I want speaker volume for "listening in" while I'm working in the garage.

I chose the design because it doesn't require a lot of unobtainium, like 1700kc IF transformers. I considered making my own IF transformers, and may do so someday, but I don't have the time or patience right here and now. The design in question uses only 1 IF can, a standard 455KC output type, which I had in the junkbox and can be pulled out of any junker AA5. The rest of the inductors are wound on 7/8" pill bottles. I actually have some thinwall PVC pipe measuring exactly 7/8" OD, so I'm using that.

The main tuning cap is a 35pf variable, which I have. Bandset is a twin 365pf, for which I'm using 2 sections of the 3-section variables you can buy



at Antique Radio Supply.

Selectivity mostly comes from a dual-crystal filter using two of the old surplus military "channel" FT243 crystals; in this case, Channel 327 and Channel 45, which are about 400 cycles apart. For phone reception, they recommend Channels 327 and 326, which are about 1500 cycles apart. I have none of these but will order smaller wire-lead crystals of appropriate frequencies and create a switchable CW/phone filter on a piece of perfboard and mount it in a diecast box. (My intent is to someday build a tube SSB exciter.)

So, question: What sort of crystal format should I order to match those old FT243's? 30pf? Series? I don't know much about crystal arcana.

The only part I haven't nailed yet is a 300uH slug-tuned inductor for the BFO, and I'm casting about for that. I may use one winding of an old IF can. I've carved up enough AA5s in my day to have a boxful; it's no great loss. It's a simple triode Clapp circuit and I'm sure I can make something work. (I'm going to breadboard the BFO first so I don't have to do a lot of snip'n'switch inside the actual chassis.) The BFO is coupled into the IF "by magic"; that is, by stray capacitive coupling. No direct coupling is shown. We'll see how well that works.

Anyway. The circuit is about as simple a superhet as I've ever seen, and I don't expect it to be a 75A4. I'll work into a more elaborate receiver later on, but this would be an ideal companion to the 6T9er transmitter.

I'll let everybody know how it works. Hope to have it done by Thanksgiving if I can get the crystals, and I'll post the photos on my Web site. (I'm preparing pictures of some other GB projects for posting too.) Needless to say, if anyone's ever built this particular circuit I'd like to hear from them.

--73--

--Jeff Duntemann KG7JF  
Scottsdale, Arizona

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Date: Fri, 18 Oct 1996 13:35:40 -0600 (MDT)  
From: toyboat@freenet.edmonton.ab.ca  
To: Jeff Duntemann <jeffd@coriolis.com>  
Cc: Multiple recipients of list <glowbugs@theporch.com>  
Subject: Re: GB request  
Message-ID: <Pine.A41.3.95.961018123846.108556B-100000@fn2.freenet.edmonton.ab.ca>



Hello Jeff,

I read with great interest about your analysis of the Lew McCoy receiver. It is ingenious, as you said, because of the prodigious use of pill bottles in it for most coils, and because it only needs 3 identical 6U8's acting as 6 stages. It is in my "wish" file, along with photocopies of many other QST, Pop-tronics, Element-tronics, etc, projects. (The library is getting rich off my quarters :-))

Actually though, the 6U8 is a triode-pentode, so there are 3 triodes, 3 pentodes in it. (pentode - R.F. amp., mixer, I.F. amp. / triode - local osc., B.F.O., single audio stage)

I looked long and hard at it too, because so many obstacles to parts and complexity had been removed, and because it is so compact, yet quite comparable to '60s commercial novice superhets. The crystal filter discouraged me, but then I just didn't think of using wire lead jobs. I scrounged 455 Khz. I.F. cans from a dead clock-radio at a flea market. (lots of good stuff in one of these 5-tubers.)

I don't know much about the crystal lore myself, so I am interested in what can be offered by the experts.

As for the 300 uH slug-tuned coils, I was thinking.... Old T.V. sets of the 70's and earlier used a lot of slug-tuned coils. Could you get a couple from a funky little T.V. shop, or from an old chassis in a relative's basement, attic, or garage? Lew McCoy liked to use scrounged T.V. parts in his designs, so it is possible that these are such. If you had the slug-tuned forms, you could rewind the coils, and fine-tune with a grid-dip oscillator.

I thought that I would mention also the companion transmitter for this receiver. "The Mighty Midget" (QST February 1966) fits into a 6" cube box, is MOPA design/PI-output, uses 6GW8 triode/pentode with input of 10 watts on 80/40 meters, and uses a silicon diode voltage doubler and 125VAC/50 ma. power trafo. Very simple, low-cost, and appealing project. Also a Lew McCoy design.

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** Shane <toyboat@freenet.edmonton.ab.ca> **
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** Edmonton, Alberta, Canada **
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On Fri, 18 Oct 1996, Jeff Duntemann wrote:

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>  
> --73--  
>  
> --Jeff Duntemann KG7JF  
> Scottsdale, Arizona  
>

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Date: Fri, 18 Oct 1996 11:55:05 -1000  
From: Jeffrey Herman <jherman@hawaii.edu>  
To: boatanchors@theporch.com, glowbugs@theporch.com, qrp-1@lehigh.edu  
Subject: Upload of Coil ver.2 (inductance calculator)  
Message-ID: <96Oct18.115507hwt.188157@uhunix3.its.Hawaii.Edu>

Thought this might be of interest to the homebrews amongst us.  
Jeff KH2PZ

-----Begin Emil's coil file-----

I have uploaded on oak.oakland.edu in the directory:

/pub/hamradio/ham-utils coil200.zip

COIL version 2.00

This program computes the electrical self inductance of various  
shapes and sizes of air core coils:



- Single-layer circular solenoid of round wire
- Multilayer circular solenoid
- N-turn circular loop
- Circular solenoidal current sheet
- Straight round wire
- Circular toroid, circular winding
- Circular torus ring, rectangular winding
- Single-layer square solenoid
- Multilayer square solenoid (low precision)

and the LC parameters at resonance:

- Inductance at resonance
- Capacity at resonance
- Frequency at resonance
- Impedance of LC

The program is "Cardware". (i.e. freeware but you'll have to send me a postcard if you use it).

Emil LAURENTIU

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End of GLOWBUGS Digest 325

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